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### **REMARKS**

Claims 1-4, 6-11, 13-29 and 47-89 are currently pending and under examination. By the present amendment claims 90 and 91 have been added. Following entry of the amendment claims 1-4, 6-11, 13-29 and 47-91 will be pending.

The preamble of claim 47 has been amended support for which can be found in the specification, for example, at page 16, lines 21-23; page 25, lines 2-5; and at claims 1 and 30 as filed. The preamble of claim 48 has been amended support for which can be found, for example, in the last line of claim 48 and in the specification, for example, at page 12, lines 3-7; page 13, line 26, through page 14, line 29; and page 18, lines 27-30. New claims 90 and 91 have been added support for which can be found in the specification, for example, at page 6, line 22, through page 7, line 2; page 15, lines 17-24; and page 34, lines 20-24. Therefore, the amendments and new claims do not raise an issue of new matter. Furthermore, Applicant respectfully submits that entry of the amendments and new claims after final is proper because the claims are placed into condition for allowance or in better form for consideration on appeal, and do not raise new issues for consideration in accordance with 37 C.F.R. 1.116 and MPEP 714.12 and 714.13. Therefore, entry of the amendments is respectfully requested.

### **Objections to the Specification**

The specification is objected to for allegedly using the word "BeadArray" without acknowledging it as a trademark. Applicant respectfully submits that the word is not a trademark. Although a trademark for the word was applied for, the trademark application was subsequently abandoned on December 28, 2001. Therefore, Applicant respectfully requests that the objection be withdrawn.

The specification is objected to allegedly because the Brief Description of the Drawings fails to correspond to Figure 8. The Brief Description of the Drawings has been amended to identify panels A through G of the drawing as suggested in the Office Action. Therefore, Applicant respectfully requests that the objection be withdrawn.

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**Rejections Under 35 U.S.C. § 112**

Claims 28, 29 and 88 stand rejected under 35 U.S.C. § 112, first paragraph as allegedly containing subject matter that was not described in such a way as to reasonably convey to one skilled in the art that the inventor, at the time the invention was filed, had possession of the claimed invention. The Office Action alleges that the specification does not disclose a "balancing signal transformation" as recited in claims 28 and 29, nor a step of balancing by signal transformation as recited in claim 88.

Applicant respectfully traverses the rejection. Applicant respectfully disagrees with the assertion in the Office Action that the specification at page 22, line 29, through page 23, line 7 merely discusses methods of signal transformation but not a balancing signal transformation. In contrast, the specification teaches that

A method of the invention can further include a step of balancing sets of signal values by a signal transformation, thereby balancing the probability function for the distribution of the sets of signal values as a function of signal intensity.

Page 22, line 29, through page 23, line 1 (emphasis added). Those skilled in the art would have understood from the teaching in the specification including, for example, the teaching of balancing sets of signal values by a signal transformation, that the inventors were in possession of a balancing signal transformation as recited in claims 28 and 29. Furthermore, those skilled in the art would have understood from the teaching in the specification that the inventor was in possession of "a step of balancing said n sets of first and second signal values by a signal transformation, thereby balancing the probability function for the distribution of said n sets of first and second signal values as a function of signal intensity" as recited in claim 88. More specifically, use of the term "balancing" as an adjective to identify antecedent basis for the signal transformation recited in the claims, whether or not literally written in the specification, is supported in the specification, for example, at the passage cited above, in accordance with the legal standard that the specification provide an adequate description to reasonably convey to one skilled in the art that the inventor at the time the application was filed had possession of the claimed invention. Therefore, Applicant respectfully requests that the rejection be withdrawn.

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Claims 47-89 stand rejected under 35 U.S.C. § 112, second paragraph as allegedly indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The Office Action alleges that claim 47 and 49-69 are unclear because the preamble of claim 47 recites a genotyping system but none of the components (a) through (d) is clearly indicated to be used to accomplish such a task. Applicant respectfully traverses. The body of the claim recites modules having commands for manipulating genetic data, for example, at (c)(vi), (d)(i) and (d)(ii). As taught in the specification for example at page 5, lines 20-23, data from a genotyping assay is an exemplary type of genetic data. Accordingly, it is sufficiently clear that modules capable of manipulating genetic data as recited in the body of the claim can be used to analyze the genetic data to accomplish a task of genotyping. Nevertheless, in order to further prosecution, the preamble of claim 47 has been amended to recite a system for analysis of genetic data. The rejection has been rendered moot by the amendment. Therefore, Applicant respectfully requests that the rejection be withdrawn.

The Office Action further alleges that claims 48 and 70-89 are unclear because the preamble of claim 48 recites determining a genotyping score but none of the steps of the claim is clearly indicated to accomplish such a task. Applicant respectfully traverses. The body of the claim recites determining, for an individual, the alleles present at said  $n$  loci. The specification teaches that determination of alleles present at several loci can be used to determine a genotyping score (see, for example, page 4, lines 1-3 and page 33, line 28, through page 34, line 5). Accordingly, it is sufficiently clear that the method steps of the claim can be used to determine alleles present at several loci in order to determine a genotyping score. Nevertheless, in order to further prosecution, the preamble of claim 47 has been amended to recite a method of determining the alleles present at  $n$  loci for an individual. The rejection has been rendered moot by the amendment. Therefore, Applicant respectfully requests that the rejection be withdrawn.

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**Rejections Under 35 U.S.C. § 102**

Claims 1-4, 6-8, 19 and 22 stand rejected under 35 U.S.C. § 102(b) as allegedly anticipated by Hill et al. (*Genome Biology* 2:1-13 (2001)). In maintaining the rejection, the Office Action alleges that the Hill et al. reference (Hill et al.) discloses a step of projecting said control points to a line or curve passing through said sweep points, thereby forming set points and cites Figure 2 for allegedly projecting a line that goes through the sweep points. The Office Further alleges that points in Figure 2 that are on the line read on the set points recited in claim 1.

Applicant respectfully traverses the rejection. First, projecting points to a line is not equivalent to projecting a line that goes through points. Projecting control points to a line or curve involves a change in location for the control points. In this regard the specification teaches that

Once the location of the set points has been determined in step 222, the parameters of a registration transformation equation can be determined according to the change in location occurring for the control points that are projected to the set points in step 224.

Page 21, line 8-11. Such a change in location for the control points is further exemplified in Example I which describes

The scatter points that were closest to each x axis sweep point were defined as candidate homozygote A control points (dark grey points in Figure 10A). Using a similar sweep on the y axis candidate homozygote B control points were identified (light grey points in Figure 10A). A first straight line was then fit through the candidate homozygote A control points and a second straight line was fit through the candidate homozygote B control points. The intercept of the two lines was computed. This intercept identified the amount of shift (translation) in the x and y directions for the control points thus establishing parameters for translation.

Page 35, lines 1-8. Fitting a curve to a set of data points as performed by Hill et al. in generating Figure 2 of the cited reference does not involve translating any data points, much less translating a set of data points that are identified as control points. Absent any description of a change in location for a set of control points by Hill et al., the reference does not describe projecting said

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control points to a line or curve passing through said sweep points, thereby forming set points as claimed.

Second, Hill et al. does not describe set points. In this regard, Applicant disagrees with the assertion in the Office Action that that the points in Figure 2 that are on the line read on the set points recited in claim 1. As taught in the specification

the term "set point" is intended to mean the location on a line to which a control point is transferred when determining parameters of a registration transformation equation.

Page 7, lines 10-13. As set forth previously, Hill et al. does not describe transfer of any of the data points. Furthermore, Hill et al. does not describe transferring any of the data points to the location of the points that are on the fitted line. Thus the points in Figure 2 of Hill et al. that so happen to fall on the fitted line are not set points because they are not locations to which a control point is transferred in accordance with the claims. Absent a description of set points, Hill et al. does not anticipate claims 1-4, 6-8, 19 and 22. Accordingly, removal of the rejection is requested.

Claims 14-16 also stand rejected under 35 U.S.C. § 102(b) as allegedly anticipated by Hill et al. In making the rejection the Office Action relies upon the reasons set forth in regard to rejection of claims 1-4, 6-8, 19 and 22 over Hill et al. The Office Action further alleges that while the legend for Figure 2 does not explicitly state that the AD is plotted through a polynomial transformation, the formula, a polynomial formula, on page 12 for projecting AD clearly indicates that the AD on Figure 2 is plotted and projected using the same formula.

Applicant respectfully traverses the rejection for the reasons set forth above in regard to rejection of claims 1-4, 6-8, 19 and 22 over Hill et al. Because claims 14-16 depend from claim 1, those reasons are sufficient to overcome the rejection.

Nevertheless, Applicant further submits that the mere description of a polynomial equation on page 12 of the Hill et al. reference does not "clearly indicate" that the line on Figure 2 is plotted using the equation. Hill et al. describes the equation on page 12 in the context of

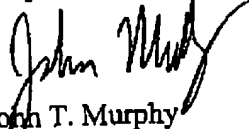
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simulating array data. In contrast, Figure 2, is a calibration curve derived from actual data as indicated in the legend which states that "eleven control transcripts are spiked into the hybridization solution at known concentrations and the absolute difference measurements for these controls are plotted against their known frequencies." Nowhere does the figure legend or any other description of Figure 2 in the reference describe the data as being related to simulated array data. Conversely, neither the description of the equation on page 12, nor its description anywhere in the reference relate the equation to the data of Figure 2. Thus, the nexus attempted to link the equation and the Figure in the Office Action does not exist. For this reason and, independently, for the reasons set forth above in regard to claims 1-4, 6-8, 19 and 22, Hill et al. does not anticipate claims 14-16. Accordingly, removal of the rejection is requested.

### CONCLUSION

In light of the Amendments and Remarks herein, Applicant submits that the claims are in condition for allowance and respectfully request a notice to this effect. The Examiner is invited to call the undersigned agent should there be any questions.

Respectfully submitted,

  
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